

1 ATGATTACAATAGTTTATTAAATCCTAGGCTATCTGGTCTCGATTCCATCTGGATTGGACAAGTATTCTTCAAAATCAATCTACGGCAGC
 1 M I T I V L L I L A Y L L G S I P S G L W I G Q V F F Q I N L R E H 34
 1 TACAAAGGCTTAACTGGAAAGGACCAACACCTTCGCAATTAGGTAGAAAGCTGGTATGGAACCTTTGATTGACTTTTCAAGGAAACCCCTAGC
 1 01 ATGGTTCTGGTAACACTGGAAAGGCTGTAAGCTAACCTGGTAAATCCATTCTTTCGACCAATACCTGAAACACTAACCTGAAAGCTCTGGATCC
 1 35 G S G N T G T T N T F R I L G K K A G M A T F V I D F F K G T L A 67
 1 35 AACGCTGCTTCCGATTATTTCATCTACAAGGGGTTCTCCCTCATCTTGGACTTTGGCTGTTATGGCCATACCTTCCCTATCTTGAGGATT
 1 201 TTGGGACGAAAGGCTAATAAAAGTAGATGTTCCGGAAAGGAGAGTAGAAACCTGAAAACCGACAAATAGCCGGTATGGAAGGGATAAGAAACGTCTAAA
 1 68 T L L P I I F H L Q G V S P L I F G L L A V I G H T F P I F A G F 100
 1 68 AAAGGGTGAAGGCTGCGAACCAAGTGGCTGGAGGTGATTTCGGATTTCGGCTATCTTCTGTCTTACCTTGGATTATCTCTGGAGGCTCTATAC
 1 301 TTTCACCAATTCCGACAGCGTTGGTCAACCTCACTAAAGCCTAAACGGGATAAGAACAGATGGAAACGAGATGGAAACCGCTAACTAGGACTCATTTGATACT
 1 101 K G G K A V A T S A G V I F G F A P I F C L Y L A I I F F G A L Y L 134
 1 101 TTGGCAAGTAGTTCACTGTCTAGTGTCAAGCATCGATTGGGGCTGTATCGGGGTCTGCTCTTCCACCTTGGTTTATCCTGAGTAACTATGA
 1 401 AACCGTCATACTAAAGTAGTACAGTACAGATCAAGTGTCTAGCTAACGCCGACAAATGCCCAAGACGAGAAAGGTGAACAAACCAAAATAGGACTCATTTGATACT
 1 135 G S M I S L S S V T A S I A A V I G V L L F P L F G F I L S N Y D 161
 1 135 CTCTCTCTCATGGCTTATTCTAGGCACTTGTAGTTGATTATCATCGTCATAAGGACAATAATAGCTCGTATCAAAAATAAAACTGAAAATTGGTC
 1 501 GAGAGAGAAAGTAGCGATAATAAGAATCGTGAACGATCAAACTAATAGTAAGCAGTATTCTGTATATCGGCAATAGTTTGACTTTAAACCAAG
 1 168 S L F I A I I L A L S L I I I R H K D N I A R I K N K T E N L V 201
 1 168 CCTGGGGATGAACTAACCCATCAAGATCCTAAATAA 642 SEQ ID NO:2
 1 601 GGAACCCCTAACCTGGATTGGTAGTTCTAGGTTTTATT 213 SEQ ID NO:11
 1 201 P W G L N L T H Q D P K K * 213 SEQ ID NO:1

FIG.

FIG. 2

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**STRATEGY FOR TARGETED DELETIONS OF GENES
IN *S. PNEUMONIAE***

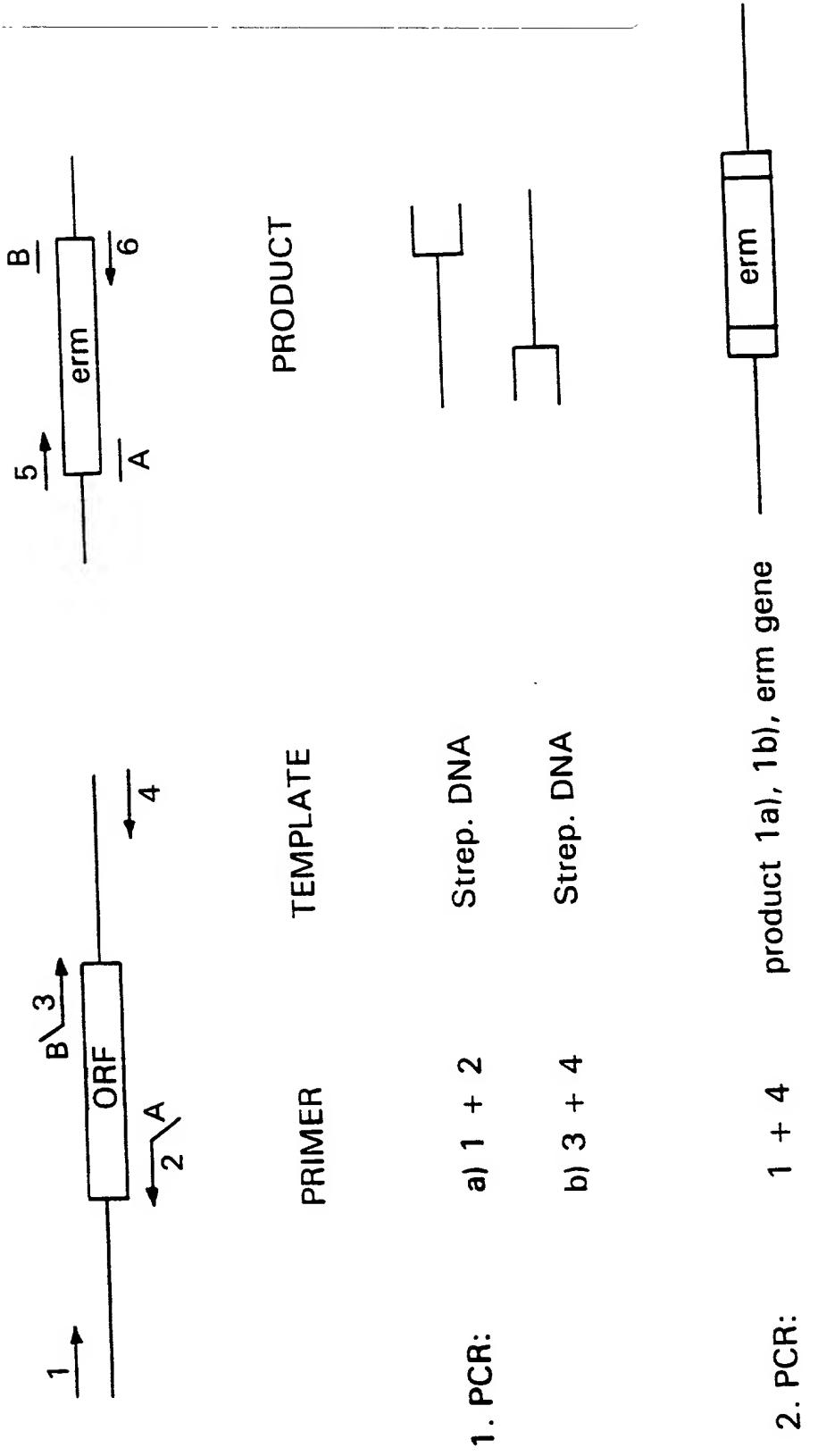


FIG. 3

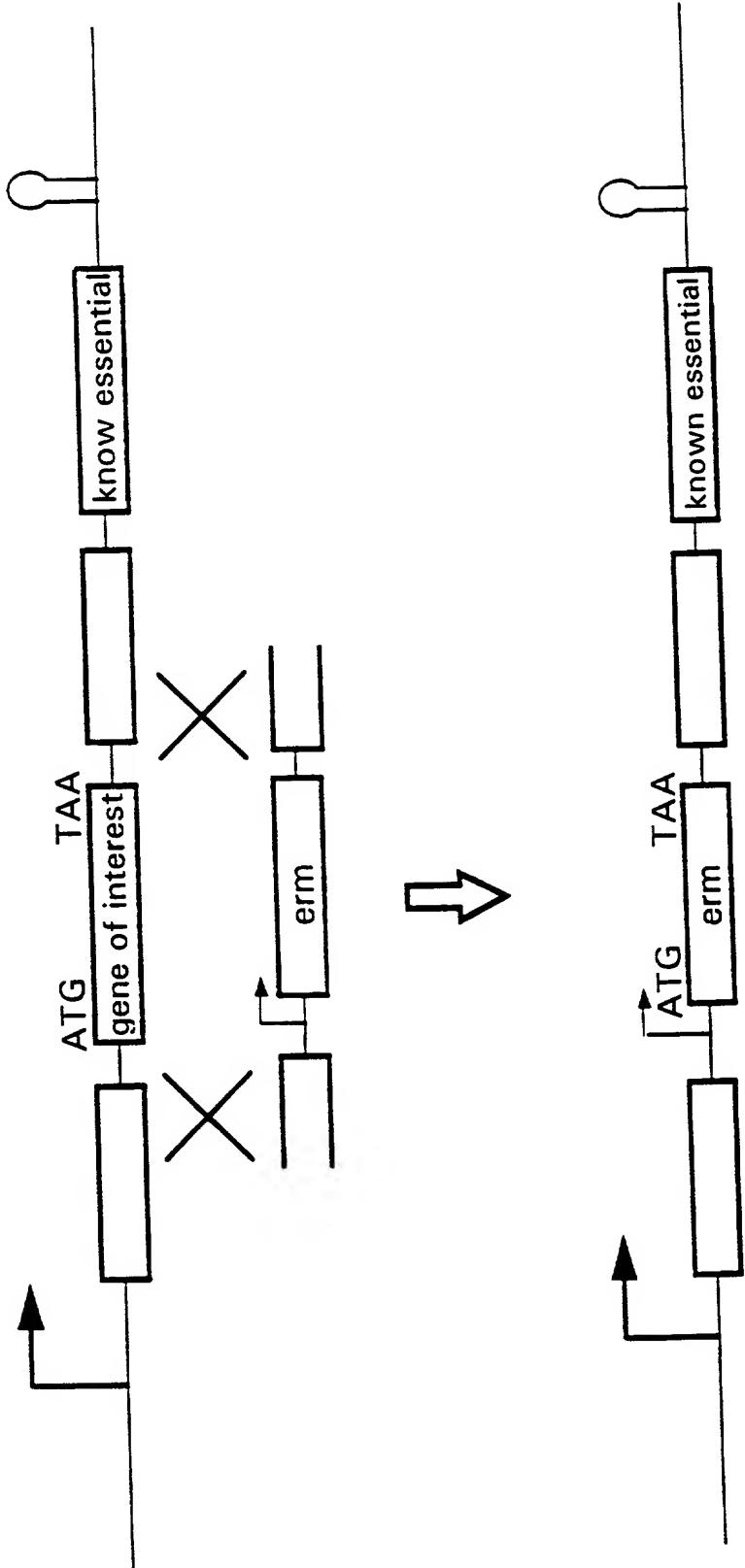
NON-POLAR GENE KNOCKOUTS IN *S. PNEUMONIAE*

FIG. 4